

TITLE 12
PERFORMANCE STANDARDS

SUBTITLE 1. OVERVIEW

§ 12-101. Purpose.

The performance standards in this title are designed to promote and protect Business Districts, as business areas, and M-1 Districts, as light industrial areas, thereby promoting and maintaining the most appropriate and beneficial use of these areas. The application of these standards will also tend to protect business and residential areas in or adjacent to a Business District or an M-1 District from adverse characteristics that might otherwise result from the operation of the uses allowed in those districts.

§ 12-102. Scope of standards.

The performance standards in this title establish criteria to control the effects, as they might emanate from a particular source, of the following:

- (1) noise;
- (2) vibration;
- (3) smoke and particulate matter;
- (4) toxic matter;
- (5) odorous matter; and
- (6) glare.

§ 12-103. Applicability of standards.

(a) *In general.*

Except as specified in subsection (b) of this section, the performance standards in this title apply to:

- (1) all uses in an M-1 District; and
- (2) all activities in a Business District that involve the production, processing, cleaning, servicing, testing, or repair of materials, goods, or products.

(b) *Preexisting uses.*

- (1) Uses lawfully established before these performance standards were enacted or extended to apply to the district in which they are located need not comply with the standards.
- (2) However, if that use is later expanded, the expansion must comply with all applicable

performance standards.

§ 12-104. Use of instruments.

All instruments used for measurements required by these performance standards must meet and be used in accordance with nationally recognized good practice.

SUBTITLE 2. NOISE

§ 12-201. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Decibel.*

(1) “Decibel” or “dB” means the unit of measurement of relative sound intensity equal to 20 times the logarithm to the base 10 of the ratio of the effective sound pressure to a reference pressure of 20 micronewtons per square meter.

(2) In formula,

$$\text{dB} = 20 \text{ Log}_{10} P/P_0$$

where P is the average pressure of the measured sound, and P₀ indicates the reference pressure considered to be the weakest audible pressure a young ear can detect under ideal listening conditions.

(c) *Frequency.*

“Frequency” signifies the number of oscillations per second in a sound wave and is an index of the pitch of the resulting sound.

(d) *Octave band.*

“Octave band” means a prescribed interval of sound frequencies that classifies sound according to its pitch.

§ 12-202. Method of measurement.

(a) *Required instruments.*

For measuring the intensity and frequency of sound, the following instruments must be used:

- (1) an octave band analyzer; and
- (2) an impact noise analyzer.

(b) *Octave band analyzer.*

(1) Octave band analyzers calibrated with Pre-1960 Octave Bands (American Standards Association Z24.10-1953, “Octave Band Filter Set”) must use Table A at the end of this subtitle.

(2) Octave band analyzers calibrated in the Preferred Frequencies (American Standards

Association S1.6-1960, “Preferred Frequencies for Acoustical Measurements”) must use Table B at the end of this subtitle.

(c) *Impact noise analyzer.*

The impact noise analyzer must be used for all impact noises (that is, short-duration sounds, as from forge hammers, punch presses, and metal shears).

§ 12-203. Standards.

(a) *In general.*

- (1) At no point in an adjacent lot or in the districts shown in Tables A, B, and C may the sound pressure level of an operation or activity exceed the decibel limits in the octave bands designated.
- (2) Impact noises, as measured on an impact noise analyzer, may not exceed the peak intensities set forth in Table C.

(b) *Exceptions.*

In determining decibel limits, the following are not to be included:

- (1) background noises produced by sources not under the control of the business or industry, such as the operation of motor vehicles or other transportation facilities; and
- (2) noises produced by blasting during necessary periods of building construction, but only if the blasting operation complies with the permit and other requirements of City Code Article 9, § 8-6 {“Blasting — permits; regulations”}.

(c) *Adjustment for nighttime activities.*

- (1) The decibel values specified for Residence and Office-Residence Districts in Tables A, B, and C are permitted only between the hours of 7 a.m. and 7 p.m.
- (2) From 7 p.m. to 7 a.m., the values specified in the tables are reduced by 5 decibels.

Table A
Pre-1960 Octave Band

<i>Octave Band Pre-1960 (Cycles per Second)</i>	<i>Adjacent Lot</i>	<i>Business District</i>	<i>Office-Residence and Residence Districts</i>
20 - 75	80	77	74
75 - 150	69	66	62
150 - 300	62	58	54
300 - 600	57	53	49
600 - 1200	54	49	45
1200 - 2400	51	46	41
2400 - 4800	48	43	38
Above 4800	46	41	36

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Table B
Preferred Frequencies

<i>Octave Band Preferred Frequencies (Cycles per Second)</i>	<i>Adjacent Lot</i>	<i>Business District</i>	<i>Office-Residence and Residence Districts</i>
31.5	88	86	83
63	77	74	71
125	68	64	60
250	61	57	53
500	56	52	48
1000	53	48	44
2000	50	45	40
4000	48	42	38
8000	46	41	36

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Table C
Impact Noises

	<i>Adjacent Lot</i>	<i>Business District</i>	<i>Office-Residence and Residence Districts</i>
Overall Peak	86	83	80

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SUBTITLE 3. VIBRATIONS

§ 12-301. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Displacement (earth).*

“Displacement (earth)” means the amplitude of intensity of an earthborne vibration measured in inches. The displacement of amplitude is ½ the total earth movement.

(c) *Earthborne vibration.*

“Earthborne vibration” means a cyclic movement of the earth due to the propagation of mechanical energy.

(d) *Frequency.*

“Frequency” has the meaning stated in § 12-201 if this title.

(e) *Vibration.*

“Vibration” means the periodic displacement of the earth.

§ 12-302. Method of measurement.

Vibration displacements must be measured with a three-component measuring system, simultaneously measuring earthborne vibrations in three mutually perpendicular directions. The maximum vector resultant must be less than the vibration displacement permitted by this subtitle.

§ 12-303. Standards.

(a) *In general.*

- (1) An operation or activity is prohibited if, at any point in an adjacent lot or in the districts shown in Tables D and E, it causes earthborne vibrations in excess of the limits specified.
- (2) For purposes of exact interpolation between 10 cycles per second and 60 cycles per second, the product of frequency times displacement may not exceed the values set forth in Table E.

(b) *Exceptions.*

In determining limits, the following are not to be included:

- (1) background vibrations produced by sources not under the control of the business or industry, such as the operation of motor vehicles or other transportation facilities; and
- (2) vibrations produced by blasting during necessary periods of building construction, but only

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if the blasting operation complies with the permit and other requirements of City Code Article 9, § 8-6 {"Blasting — permits; regulations"}.

(c) *Adjustment for nighttime activities.*

(1) The values specified for Residence and Office-Residence Districts in Table D are permitted only between the hours of 7 a.m. and 7 p.m.

(2) From 7 p.m. to 7 a.m., the values specified in that table are reduced to ½ of those listed.

Table D
(Displacement in Inches)

<i>Frequency (Cycles per Second)</i>	<i>Adjacent Lot</i>	<i>Business District</i>	<i>Office-Residence and Residence Districts</i>
10 and below	.0015	.0008	.0006
20	.0007	.0005	.0003
30	.0005	.0003	.0002
40	.0004	.0003	.0002
50	.0003	.0002	.0002
60 and above	.0002	.0002	.0002

For impact vibrations (discrete vibration pulsations not exceeding 1 second in duration and having a pause of at least 1 second between pulses), the values specified above shall be multiplied by two.

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Table E

<i>Adjacent Lot</i>	<i>Business District</i>	<i>Office-Residence and Residence Districts</i>
.0150	.0080	.0060

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SUBTITLE 4. SMOKE AND PARTICULATE MATTER

§ 12-401. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Particulate matter.*

“Particulate matter” means any material that is suspended in or discharged into the atmosphere in a finely-divided form as a solid.

(c) *Ringelmann Chart.*

“Ringelmann Chart” means the chart by that name, as adopted and published by the United States Bureau of Mines in Circular No. 7718, on which are illustrated graduated shades of gray for estimating the light obscuration capacity of smoke or its equivalent.

(d) *Ringelmann No.*

“Ringelmann No.” means the number assigned to the area on the Ringelmann Chart that coincides most nearly with the visual density or equivalent opacity of the emission or smoke observed.

(e) *Smoke.*

“Smoke” means small gas-borne particles, other than water, that form a visible plume in the air.

§ 12-402. Method of measurement.

For determining the visual density or equivalent opacity of smoke, the Ringelmann Chart must be used.

§ 12-403. Standards.

(a) *Smoke.*

(1) Except as specified in paragraph (2) of this subsection, the emission of smoke from a vent, stack, chimney, or combustion process may not exceed a density or equivalent opacity of Ringelmann No. 1.

(2) Smoke that exceeds Ringelmann No. 1 but does not exceed Ringelmann No. 3 is permitted for 2 minutes during any 8-hour period.

(b) *Particulate matter.*

(1) The emission of particulate matter from vents, stacks, and chimneys may not exceed, as measured in the sources, 0.2 pounds per hour per acre of lot property.

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- (2) The wind-bourne emission of particulate matter from open storage areas, yards, service roads, or other areas of a lot must be kept to a minimum by appropriate landscaping, paving, oiling, wetting, or other means.
- (3) The emission of particulate matter from sources in a lot must be controlled so as not to cause a nuisance across lot lines.

SUBTITLE 5. TOXIC MATTER

§ 12-501. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Toxic matter.*

- (1) “Toxic matter” means materials that, when present in relatively small amounts, are capable of causing injury to living organisms by chemical means.
- (2) “Toxic matter” includes radioactive materials.

§ 12-502. Method of measurement.

For measuring toxic matter, the most recent list of “Threshold Limit Values”, as published by the American Conference of Governmental Industrial Hygienists or its successor, must be used.

§ 12-503. Standards.

(a) *Where measured.*

All measurements for toxic matter must be taken at a point beyond the lot line, at ground level or at habitable elevations, whichever is more restrictive.

(b) *Maximum permitted.*

- (1) If a toxic matter is listed in “Threshold Limit Values”, the measured concentration based on a 24-hour sampling period may not exceed 1/30 of the maximum permissible airborne concentration allowed by “Threshold Limit Values” for an industrial worker.
- (2) If a toxic matter is not listed in “Threshold Limit Values”, the concentration either at ground level or at habitable elevations outside the lot line may not be injurious to health, as determined by the City Health Department.

SUBTITLE 6. ODOROUS MATTER

§ 12-601. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Odorous matter.*

“Odorous matter” means any material that produces an olfactory response in human beings.

(c) *Odor threshold.*

“Odor threshold” means the minimum concentration of odorous matter that, when in the air, produces an olfactory response in human beings.

§ 12-602. Method of measurement.

For measuring odor thresholds, the American Society of Testing and Materials Method D1391-57, “Standard Method for Measurement of Odor in Atmospheres (Dilution Method)” must be used.

§ 12-603. Standards.

(a) *In general.*

The release of odorous matter across lot lines may not exceed the odor threshold when measured in an adjacent lot, either at ground level or at habitable elevations.

(b) *Odorous effluent.*

If the effluent from any use becomes odorous, such as by bacterial action or chemical reaction, the odor produced must meet the requirements of the district in which the odor originates.

SUBTITLE 7. GLARE

§ 12-701. Definitions.

(a) *In general.*

In this subtitle, the following terms have the meanings indicated.

(b) *Footcandle.*

“Footcandle” means the unit of illumination that equals the illumination at all points 1 foot distant from a uniform point source of 1 candle power.

§ 12-702. Method of measurement.

For measuring illumination, the International Candle, adopted in 1940 as 1/60 of the brightness of freezing platinum, must be used.

§ 12-703. Standards.

(a) *Maximum levels.*

- (1) An operation or activity that produces glare must be conducted so that no direct or indirect illumination from the source of light exceeds a level of $\frac{1}{2}$ -foot candle when measured at the nearest point of any lot line in a Residence or Office-Residence District.
- (2) If street lighting produces illumination in excess of 1 footcandle at any point in a Residence or Office-Residence District, the contribution by light sources from within a Business District or an M-1 District measured at the same point may not exceed 50% of the street lighting.

(b) *Flickering or intense lights.*

Flickering or intense sources of light must be controlled or shielded so they do not cause a nuisance across lot lines.